AMENDMENTS TO THE SPECIFICATION:

Page 1, between lines 6 and 7, insert the following paragraph:

--The American patent US-A-5,862,001 describes a non-deviating prism with a continuously variable dispersion. This arrangement of optical elements allows to obtain a variable angular dispersion without any angular deviation at a central wavelength.--

Page 2, replace the paragraph, beginning on line 4, with the following amended paragraph:

--The first object is achieved by a phase shift device ~~according to the preamble of claim 1, characterised in that the at least one dispersive element comprises a first pair formed by first refractive means and second refractive means, the first refractive means having a first refractive means input plane for receiving the first optical beam and a first refractive means output plane, the first refractive means input plane and the first refractive means output plane being at a predetermined angle β to each other, 0 < β < π/2, the second refractive means having a second refractive means input plane and a second refractive means output plane, said second refractive means input plane being positioned equidistant to the first refractive means output plane and the second refractive means output plane being~~

~~positioned parallel to the first refractive means input plane~~ as disclosed herein.--

Page 2, delete lines 20-31.

Page 3, replace the paragraph, beginning on line 1, with the following amended paragraph:

--Using ~~the further~~ multiple pairs of respective first and second refractive means, it becomes possible to obtain a phase shift of an optical beam through the achromatic phase shift device, which is wavelength independent over a broad wavelength region.--

Page 3, between lines 3 and 4, insert the following paragraph:

--In this embodiment, a perfect match of the predetermined phase shift is obtained for M+1 wavelengths.--

Page 3, replace the paragraph, beginning on line 4, with the following amended paragraph:

--In an embodiment of the achromatic phase shift device according to the present invention, the respective first refractive means of the ~~plurality of further~~ multiple pairs ~~re~~ are positioned adjacent to each other, forming a first group, the respective first refractive means in the first group being in physical contact. Preferably, also the respective second refractive means of the ~~plurality of further~~ multiple pairs are positioned adjacent to each other, forming a second group, the

respective second refractive means in the second group being in physical contact. By positioning the respective first and second refractive means such that they are in physical contact, interfaces occur between materials of different refractive index. The feature that the elements are in physical contact enables producing achromatic phase shift devices in a reliable and robust manner.--

Page 3, replace the paragraph, beginning on line 15, with the following amended paragraph:

--In a preferred embodiment of the achromatic phase shift device according to the present invention, the respective first and second refractive means of the ~~plurality of further~~ multiple pairs are positioned symmetrically on respective sides of ~~the~~ a first element pair. This allows a very compact arrangement of the device according to the present invention.--

Page 3, replace the paragraph, beginning on line 19, with the following amended paragraph:

--In a further embodiment, ~~all~~ the refractive index of the first refractive means and the second refractive means of all of ~~first pair and the plurality of further pairs have a~~ a specific pair of element pairs is substantially equal ~~refractive index~~. This has advantages with respect to production of the device (only one dispersive material is needed), but also during

operation, as environmental conditions will have less impact when all refractive means are made of the same material.--

Page 4, delete lines 18-28, including the formulas.

Page 5, delete lines 1 and 2.

Page 7, replace the paragraph, beginning on line 29, bridging pages 7 and 8, with the following amended paragraph:

--Defining

$$x_1 = x_{11} + x_{12} \qquad (2)$$

and

$$n_2 = \cos\beta\sqrt{1 - n_1^2 \sin^2\beta} + n_1 \sin^2\beta \qquad (3)$$

being a virtual refractive index n_2, the optical path w_p length can be written as

$$w_p = n_1 x_1 + n_2 x_2\underline{.} \qquad (4)$$--

Page 8, replace the paragraph, beginning on line 3, with the following amended paragraph:

--This is equivalent to an arrangement with two plan parallel plates with different refractive indices positioned in series, and allows introducing a phase shift ψ_p in an optical beam with an optical wavelength λ by altering the optical path length w_p according to the equation

$$\psi_p = 2\pi\ w_p/\lambda\underline{.} \qquad (5)$$--

Page 10, replace the paragraph, beginning on line 6, with the following amended paragraph:

--The refractive indices n_1, n_2 can be represented as second order expansions as function of the wavelength λ of the form:

$$n_i = n_{0i} + a_i(\lambda - \lambda_0) + b_i(\lambda - \lambda_0)^2 + R_i(\lambda - \lambda_0), \qquad (8)$$

in which λ_0 is the central wavelength of the spectral band considered, n_{0i} is a wavelength independent term, a_i the first order term coefficient, b_i the second order term coefficient and R_i the residual order term coefficient. The expression for ψ_d thus becomes:

$$\psi_d/2\pi = \{w_0 + d_1(n_{01} - 1) + d_2(n_{02} - 1)\}\frac{1}{\lambda} + (d_1 a_1 + d_2 a_2)\frac{\lambda - \lambda_0}{\lambda} + \\ + (d_1 b_1 + d_2 b_2)\frac{(\lambda - \lambda_0)^2}{\lambda} + \{d_1 R_1(\lambda - \lambda_0) + d_2 R_2(\lambda - \lambda_0)\}\frac{1}{\lambda}\,\underline{.} \qquad (9)$$--

Page 10, replace the paragraph, beginning on line 14, with the following amended paragraph:

--The wavelength dependent terms with $1/\lambda$ and $(\lambda - \lambda_0)^2/\lambda$ are eliminated by requiring:

$$w_0 + d_1(n_{01} - 1) + d_2(n_{02} - 1) - (d_1 a_1 + d_2 a_2)\lambda_0 = 0 \qquad (10)$$

and:

$$d_1 b_1 + d_2 b_2 = 0\,\underline{.} \qquad (11)$$--

Page 10, replace the paragraph, beginning on line 19, with the following amended paragraph:

--The phase difference that now results (wavelength independent up to second order) is given by:

$$\psi_d = \psi_0 + \Delta\psi \tag{12}$$

with:

$$\psi_0/2\pi = d_1 a_1 + d_2 a_2 \tag{13}$$

and:

$$\Delta\psi/2\pi = \frac{d_1 R_1(\lambda - \lambda_0) + d_2 R_2(\lambda - \lambda_0)}{\lambda}. \tag{14}$$ --

Page 10, replace the paragraph, beginning on line 26, bridging pages 10 and 11, with the following amended paragraph:

--From (11) and (13) d_1 and d_2 are found:

$$\left.\begin{aligned} d_1 &= \frac{-\psi_0 b_2}{a_2 b_1 - a_1 b_2}\frac{1}{2\pi} \\ d_2 &= \frac{\psi_0 b_1}{a_2 b_1 - a_1 b_2}\frac{1}{2\pi}. \end{aligned}\right\} \tag{15}$$ --

Page 11, replace the paragraph, beginning on line 4, with the following amended paragraph:

--The final expression for w_0 follows from (10) and (15):

$$w_0 = \frac{\psi_0}{2\pi}\left\{\lambda_0 + \frac{b_2(n_{01} - 1) - b_1(n_{02} - 1)}{a_2 b_1 - a_1 b_2}\right\}. \tag{16}$$ --

Page 11, replace the paragraph, beginning on line 11, with the following amended paragraph:

--For the virtual refractive index n_2, as defined in equation (3) above, the coefficients a_2 and b_2 can be written according to

$$a_2 = \left(\frac{dn_2}{d\lambda}\right)_{\lambda=\lambda_0} = a_1 \sin^2\beta\left(1 - \frac{n_{01}\cos\beta}{\sqrt{1 - n_{01}^2 \sin^2\beta}}\right) \qquad (17)$$

and

$$b_2 = \left(\frac{d^2 n_2}{d\lambda^2}\right)_{\lambda=\lambda_0} = -1/2\, a_1{}^2 \frac{\sin^2\beta\cos\beta}{\left(1 - n_{01}^2\sin^2\beta\right)^{3/2}} + \frac{b_1}{a_1} a_2. \qquad (18)$$--

Page 11, replace the paragraph, beginning on line 16, with the following amended paragraph:

--Introducing the parameters γ_1 and γ_2, according to:

$$\gamma_1 = \frac{-b_2}{a_2 b_1 - a_1 b_2}, \quad \gamma_2 = \frac{b_1}{a_2 b_1 - a_1 b_2} \qquad (19)$$

equation (15) can be reformulated as

$$\left.\begin{aligned} d_1 &= \gamma_1 \frac{\Psi_0}{2\pi} \\ d_2 &= \gamma_2 \frac{\Psi_0}{2\pi}. \end{aligned}\right\} \qquad (20)$$--

Page 15, replace the paragraph, beginning on line 1, with the following amended paragraph:

--In a two beam system, one phase shift device 1 may be positioned in the path of one of the first and second beams 40,

41. In that case, an optical path length difference w_d is introduced which is equal to

$$w_d = -w_0 + \sum_{k=0}^{M-1} a_k d_k \underline{.} \qquad (22)[[.]]\text{--}$$

Page 15, replace the paragraph, beginning on line 5, with the following amended paragraph:

--It is also possible to provide a phase shift device 1 in each of the optical paths of the first and second beams 40, 41 as indicated in Fig. 5. In this case, the optical path difference w_d introduced between the first and second optical beams 40, 41 is equal to

$$w_d = -w_0 + \sum_{k=0}^{M-1} a_k \left(d_{1,k} - d_{2,k}\right)\underline{.} \qquad (23)[[.]]\text{--}$$

Page 15, replace the paragraph, beginning on line 15, with the following amended paragraph:

--The dimensions of the refractive elements can be chosen in a number of manners. The first is to obtain a perfect match for M+1 wavelengths $\lambda_0 \ldots \lambda_M$. This can be obtained by solving the following M+1 equations for $d_0 \ldots d_{M-1}$ and w_0:

$$\begin{array}{l} -w_0 + a_0(\lambda_0)\, d_0 + \cdots\cdots + a_{M-1}(\lambda_0)\, d_{M-1} = \frac{\psi_0}{2\pi}\lambda_0 \\ \vdots \qquad\qquad\qquad\qquad\qquad \vdots \qquad\qquad \vdots \\ -w_0 + a_0(\lambda_M)\, d_0 + \cdots\cdots + a_{M-1}(\lambda_M)\, d_{M-1} = \frac{\psi_0}{2\pi}\lambda_M \underline{.} \end{array} \qquad (25)\text{--}$$